UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

NOV 15 2017

Mr. Thomas Frick
Director
Division of Environmental Assessment & Restoration
Florida Department of Environmental Protection
Mail Station 3000
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Dear Mr. Frick:

The U.S. Environmental Protection Agency has completed its review of the document titled *Nutrient TMDLs for Lake Roberts (WBID[1] 2872A)*. Florida Department of Environmental Protection (FDEP) submitted the Lake Roberts Total Maximum Daily Loads (TMDLs) and revised chapter 62-304, Florida Administrative Code (F.A.C.),[2] including the numeric nutrient criteria (NNC) for the subject water, in a letter to the EPA dated June 19, 2017 as TMDLs and as new or revised water quality standards (WQSs) with the necessary supporting documentation and certification by FDEP General Counsel, pursuant to Title 40 of the Code of Federal Regulations part 131.

The NNC were adopted under paragraph 62-304.500(26) as site specific numeric interpretations of paragraph 62-302.530(48)(b).[3] As referenced in paragraph 62-302.531(2)(a), FDEP intends for the submitted NNC to serve in place of the otherwise applicable criteria for lakes set out in paragraph 62-302.531(2)(b). The total nitrogen and total phosphorus TMDLs for Lake Roberts would also constitute site specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), for this water segment.

FDEP submitted the Lake Roberts TMDLs to the EPA for review pursuant to both Clean Water Act (CWA) sections 303(c) and 303(d) since the TMDLs will also act as Hierarchy 1 (H1) site-specific interpretations of the state's narrative nutrient criterion pursuant to 62-302.531(2)(a)1.a. The EPA acknowledges that by virtue of establishing the TMDLs in chapter 62-304, the FDEP is also establishing an H1 interpretation of the narrative nutrient criterion for this waterbody as new or revised WQSs. The enclosed, combined WQS and TMDL decision document summarizes the EPA's review and approval of the WQSs and TMDLs.

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[1] WBID refers to **w**ater**b**ody **id**entification

[2] Unless otherwise stated, all rule and subsection citations are to provisions in the Florida Administrative Code.

[3] FDEP recently revised the table of surface water criteria set out at section 62-302.530, adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b) to paragraphs 62-302.530(90)(a) and (b). The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document, the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

In accordance with sections 303(c) and (d) of the CWA, I am hereby approving the TMDLs promulgated in chapter 62-304 for Lake Roberts as both TMDLs and as revised WQSs for total nitrogen and total phosphorus. Any other criteria applicable to these waterbodies remain in effect, especially those related to chlorophyll *a* in paragraph 62-302.531(2)(b)1, and including other applicable criteria at 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a) also remain applicable.

If you have any comments or questions relating to the approval of the H1 WQSs or TMDLs, please contact me at (404) 562-9345, or have a member of your staff contact Dr. Katherine Snyder in the WQS program at (404) 562-9840 or Ms. Laila Hudda in the TMDL program at (404) 562-9007.

Sincerely,

Mary S. Walker
Director
Water Protection Division

Enclosure

cc: Mr. Kenneth Hayman, FDEP
Ms. Stacey Cowley, FDEP
Mr. Daryll Joyner, FDEP
Ms. Erin Rasnake, FDEP

**EPA HIERARCHY 1 REVIEW DOCUMENT**

Lake Roberts (WBID 2872A)/Ocklawaha River Basin – Nutrients

This TMDL document explains in detail how the submission meets the Clean Water Act (CWA) statutory requirements for the approval of a WQS under section 303(c) and of a TMDL under section 303(d), and the EPA's implementing regulations in Title 40 of the Code of Federal Regulations (CFR) parts 131 and 130, respectively.

**REVIEWERS:** WQS: Lydia Mayo, Environmental Scientist, mayo.lydia@epa.gov
TMDL: Laila Hudda, Florida TMDL Coordinator, hudda.laila@epa.gov

# Florida Numeric Interpretation of the Narrative Nutrient Water Quality Criterion Through Total Maximum Daily Loads (TMDLs) to establish a Hierarchy 1 (H1): Joint Water Quality Standards (WQSs) and TMDLs Decision Document

**H1:** Nutrient TMDLs for Lake Roberts (**water**body **id**entification (WBID) 2872A)

**ATTAINS TMDL ID:** 67530

**Location:** Orange County, Florida

**Status:** Final

**Criteria Parameter(s):** The Lake Roberts TMDL load allocations for WBID 2872A are 1,655 kg/yr for total nitrogen (TN) and 100 kg/yr for total phosphorus (TP) expressed as long-term 7-year averages of annual loads, not to be exceeded.

**Impairment/Pollutant**: Lake Roberts is located in Orange County, Florida, in the Ocklawaha River Basin. Lake Roberts is approximately 107 acres, with a normal pool volume of approximately 1,242,024 cubic meters and an average depth of about 18.6 feet. Lake Roberts receives runoff from a watershed area described as being 488 acres occupied by a mix of wetlands, rangeland used for grazing, or animal habitat that contains native trees and shrubs, forest, agriculture, and residential and urban areas.

The lake was determined to be impaired due to the Trophic State Index (TSI) being elevated. It was later determined to exceed Florida numeric nutrient criteria (NNC) for TN, TP and chlorophyll *a* (Chl*a*). The waterbody was determined to not support its designated uses of Class III Freshwater (fish consumption; recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife). An H1 was submitted by Florida Department of Environmental Protection (FDEP) that establishes TN and TP site-specific criteria and establishes loads for point and nonpoint sources to address the impairment.

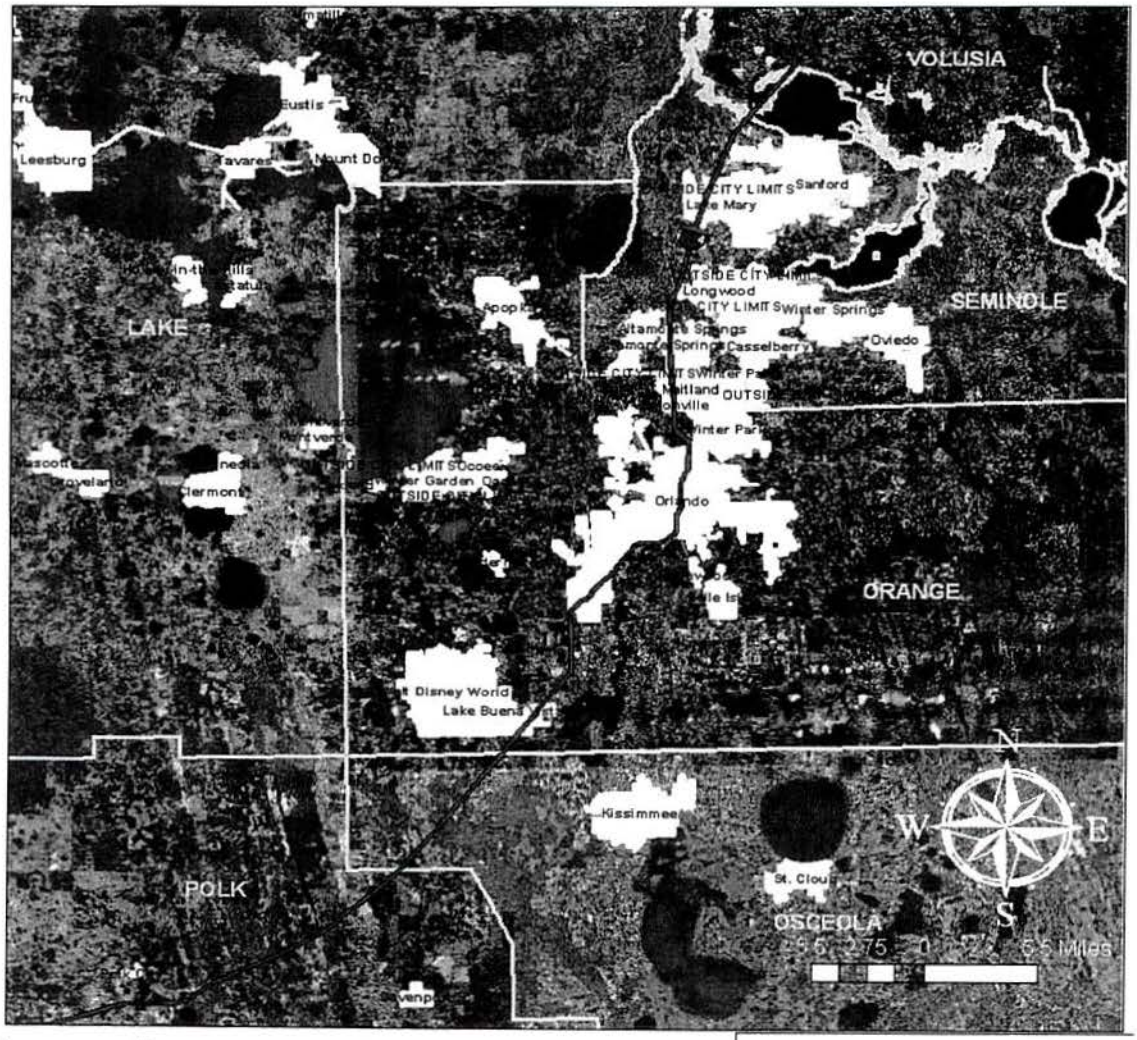
**Background:** FDEP submitted the final H1 for the *Nutrient TMDLs for Lake Roberts (WBID 2872A) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Criterion* (the "H1," "TMDL," or "Report") by letter dated June 19, 2017. The draft H1 TMDL report for Lake Roberts is dated June 2016 and was received July 5, 2016. The final Lake Roberts H1 is dated May 2017 and was delivered in person to the EPA R4 staff for review and approval on June 28, 2017.

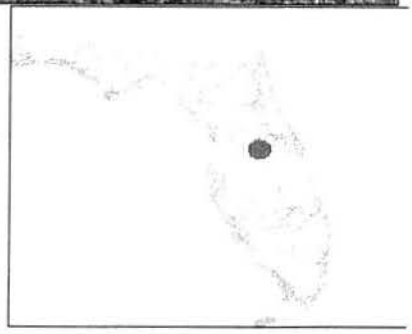
The submission included:

- Submittal letter
- Nutrient TMDLs for Lake Roberts and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Nutrient Criterion
- Documents related to Public Workshop
- Documents related to Public Hearing
- Documents related to Public Notice for Rulemaking and Rule Adoption
- Public Comments Received

**Waterbodies addressed in this H1 Approval Action:**

| | | |
|---|---|---|
| **Lake Roberts** | **WBID 2872A** | **107 acres** |



## Legend

- Lake_Roberts
- Lake Roberts watershed
- FDOT Interstates
- Florida Counties with Shoreline (areas)
- City Limits (poly)

*This document contains the EPA's review of the above-referenced H1. This review document includes WQS and TMDL review guidelines that state or summarize currently effective statutory and regulatory requirements applicable to this approval action. Review guidelines are not themselves regulations. Any differences between review guidelines and the EPA's implementing regulations should be resolved in favor of the regulations themselves. The italicized sections of this document describe the EPA's statutory and regulatory requirements for approvable H1s. The sections in regular type reflect the EPA's analysis of the state's compliance with these requirements.*

## I. WQS Decision – Supporting Rationale

*Section 303(c) of the CWA and the EPA's implementing regulations at 40 CFR part 131 describe the statutory and regulatory requirements for an approvable WQS. Set out below are the requirements for WQS submissions, under the CWA and the regulations. The information identified below is necessary for the EPA to determine if a submitted WQS meets the requirements of the CWA and, therefore, may be approved by the EPA.*

### 1. Use Designations

*Section 131.10(a) provides that each state must specify appropriate water uses to be achieved and protected. The classification of the waters of the state must take into consideration the use and value of water for public water supplies, protection and propagation of fish, shellfish and wildlife, recreation in and on the water, agricultural, industrial, and other purposes including navigation. In no case shall a state adopt waste transport or waste assimilation as a designated use for any waters of the United States.*

***Assessment:*** Lake Roberts is classified as Class III Freshwater (fish consumption; recreation, propagation and maintenance of a healthy, well-balanced population of fish and wildlife).

### 2. Protection of Downstream Uses

*Section 131.10(b) provides that in designating uses of a waterbody and the appropriate criteria for those uses, the state shall take into consideration the WQS of downstream waters and shall ensure that its WQS provide for the attainment and maintenance of the WQS of downstream waters.*

Rule 62-302.531(4) of the Florida Administrative Code (F.A.C.) requires that downstream uses be protected. Lake Roberts flows to a downstream retention pond. Based on historical information provided by EPA staff (E. Sommerville August 10, 2017), it is unclear if Lake Roberts was historically connected to this pond. The U.S. Geological Survey and U.S. Fish and Wildlife Service (USFWS) Wetlands Inventory map (wetlands map) previously classified the areas extending from Lake Roberts to and around the retention pond to downstream waters as natural wetlands characterized as PEM1F: Palustrine, Emergent, Persistent, Semi-permanently Flooded and PSS3C: Palustrine, Scrub-Shrub, Broad-Leaved Evergreen, Seasonally Flooded. From the current wetlands map it appears that wetland basins or channels were recently excavated perhaps around 2005. It is unclear if the retention pond would actually be considered a water of the United States requiring protection.

***Assessment:*** As described in the TMDL, when water levels are high enough to overflow the constructed weir from Lake Roberts, water overflows to an excavated wetland basin/channel retention pond through the weir under the residential road. Although it is uncertain if the downstream pond is a water of the United States, the developed H1 target concentrations for Lake Roberts meet or exceed the generally applicable NNC for high color and high-alkalinity lakes and are protective of the downstream pond.

### 3. Water Quality Criteria

*Section 131.11(a) provides that states must adopt those water quality criteria that protect the designated use. Such criteria must be based on sound scientific rationale and must contain sufficient parameters or constituents to protect the designated use. For waters with multiple use designations, the criteria shall support the most sensitive use.*

FDEP used the TSI index to determine that Lake Roberts was impaired for nutrients for the verified period January 1, 2005 through June 30, 2012. The TSI of 60 was exceeded in 3 out of the 5 measured years of 2005, 2008 and 2009. FDEP later determined that Lake Roberts exceeded Florida NNC for TN, TP and Chl*a*.

As stated in the TMDL, to establish the nutrient targets for Lake Roberts, FDEP used the 20 µg/L Chl*a* criterion that is applicable to this high-color and high alkalinity lake. In order to develop the TN and TP TMDLs for Lake Roberts, FDEP used calibrated watershed and receiving waterbody models to establish the in-lake TN and TP concentrations and associated watershed loads that meet an in-lake Chl*a* of 20 µg/L. Based on the calibrated model simulation, as explained in chapter 5 of the report, the final in-lake TN and TP targets are 0.044 mg/L for TP and 1.02 mg/L for TN, which are expressed as annual geometric means (AGMs), not to be exceeded in any year. The Lake Roberts TMDLs are 1,655 kg/yr for TN and 100 kg/yr for TP expressed as long-term 7-year averages of annual loads, not to be exceeded. As illustrated on page 70 of the TMDL (Table 5.10 and 5.11), the 32% load reduction scenario for TP and 20% load reduction scenario for TN will meet the Chl*a* criterion of 20 µg/L. These site-specific criteria will protect the designated uses of Lake Roberts.

***Assessment:*** The water quality criteria for TN and TP are expressed as loads. The target concentrations were included in the TMDL document for comparative purposes. The resulting water quality will protect the designated uses for this waterbody. Any other criteria applicable to this waterbody remain in effect, including the Chl*a* criterion as set out in paragraph 62-302.531(b), F.A.C.

### 4. Scientific Defensibility

*Section 131.11(b) provides that, in establishing criteria, states should establish numerical values based on 304(a) guidance, 304(a) guidance modified to reflect site-specific conditions, or other scientifically defensible methods.*

Lake Roberts is impaired for nutrients based upon TSI and later confirmed to exceed the generally applicable lake NNC. This TMDL document utilizes as a target the Chl*a* criterion of 20 µg/L, which is applicable to high color and high alkalinity lakes, including Lake Roberts. Based on the available information, there is nothing unique about the characteristics of Lake Roberts that would indicate that the applicable Chl*a* criterion should be adjusted through a site-specific criterion. The ambient in-lake nutrient concentrations needed to achieve this Chl*a* criterion are 0.044 mg/L for TP and 1.02 mg/L for TN expressed as AGMs, not to be exceeded in any year. Additional data and tools used in this TMDL included lake clarity monitoring, long term TN and TP ratios, rainfall and algal species measurements, U.S. Army Corps of Engineers BATHTUB model and sub-models, land use information, background condition model, grid-based Geographic Information System-based model ArcNLET and the Pollutant Load Simulation Model provided by the St. Johns River Water Management District.

***Assessment:*** The EPA determined that the selection of the applicable Chl*a* criterion of 20 µg/L as the response variable target is appropriate and that the watershed modeling, U.S. Army Corps of Engineers

BATHTUB model and sub-models, land use information, background condition model, and grid-based Geographic Information System-based model ArcNLET used by the state to determine total nitrogen and total phosphorus inputs that correspond to the Chl*a* criterion are appropriate and defensible methods. This approach is further supported by the TMDL report, provided by the state.

## 5. Public Participation

*Section 131.20(b) provides that states shall hold a public hearing when revising a WQS, in accordance with provisions of state law and the EPA's public participation regulation (40 CFR part 25). The proposed WQS revision and supporting analyses shall be made available to the public prior to the hearing.*

A public workshop was conducted by FDEP on July 19, 2016 in Orlando, Florida, to obtain comments on the draft nutrient TMDLs for Lake Roberts. The workshop notice indicated that these nutrient TMDLs, if adopted, constitute site-specific numeric interpretations of the narrative criterion set forth in paragraph 62-302.530(48)(b), F.A.C.,[1] that would replace the otherwise applicable NNC in subsection 62-302.531(2), for these particular waters. FDEP also held a public hearing on April 21, 2017 in Tallahassee, Florida.

***Assessment:*** FDEP has met the public participation requirements for this H1.

## 6. Certification by the State Attorney General

*Section 131.6(e) requires that the state provide a certification by the state Attorney General or other appropriate legal authority within the state that the WQSs were duly adopted pursuant to state law.*

A letter from FDEP General Counsel, Frederick L. Aschauer, Jr., dated June 19, 2017 certified that the Lake Roberts TMDLs were duly adopted as WQSs pursuant to state law.

***Assessment:*** FDEP has met the requirement for Attorney General certification for this H1.

## 7. Endangered Species Act (ESA) Section 7 Consultation

*Section 7(a)(2) of the ESA requires federal agencies, in consultation with the Services, to ensure that their actions are not likely to jeopardize the continued existence of federally listed species or result in the destruction or adverse modification of designated critical habitat of such species.*

The existing default NNC for the waterbody received concurrence by the U.S. Fish and Wildlife Service (USFWS) on July 31, 2013. Because the TN load corresponds to a site-specific TN concentration for this H1 that is within the default criterion (62-302.531(2)(b)1., F.A.C.), an additional ESA section 7 consultation for this standards action is not required. USFWS provided concurrence with the EPA's programmatic consultation for site-specific nutrient criteria in Florida on July 21, 2015 for any site-specific nutrient criteria that are more stringent than the existing default NNC in the state of Florida for

[1] FDEP recently revised the table of surface water criteria set out at section 62-302.530, F.A.C., adding parameters to the table to incorporate new human health criteria promulgated by the state in 2016. These additions resulted in the state narrative nutrient criteria being renumbered from paragraphs 62-302.530(48)(a) and (b), F.A.C. to paragraphs 62-302.530(90)(a) and (b), F.A.C. The new criteria have not yet been submitted to the EPA for review under the CWA and are not effective for CWA purposes. In this document, the EPA refers to the narrative nutrient criteria as paragraphs 62-302.530(48)(a) and (b).

the waterbody. Because the TP load corresponds to a site-specific TP concentration for this H1 that is more stringent than the default criterion (62-302.531(2)(b)1., F.A.C.), an additional ESA section 7 consultation for this standards action is not required.

***Assessment:*** The EPA has met the ESA requirements for this action.

## II. TMDL Review

*Section 303(d) of the CWA and the EPA's implementing regulations at 40 CFR part 130 set out the statutory and regulatory requirements for approvable TMDLs. The following information is generally necessary for the EPA to determine if a submitted TMDL fulfills the legal requirements for approval under section 303(d) and the EPA's regulations, and should be included in the submittal package. Use of the verb "must" below denotes information that is required to be submitted because it relates to elements of the TMDL required by the CWA and by regulation.*

### 1. Description of Waterbody, Pollutant of Concern and Pollutant Sources

*The TMDL analytical document must identify the waterbody as it appears on the state/tribe's 303(d) list, including the pollutant of concern. The TMDL submittal must include a description of the point and nonpoint sources of the pollutant of concern, including the magnitude and location of the sources. Where it is possible to separate natural background from nonpoint sources, a description of the natural background must be provided, including the magnitude and location of the source(s). Such information is necessary for the EPA's review of the load and wasteload allocations, which are required by regulation. The TMDL submittal should also contain a description of any important assumptions made in developing the TMDL, such as: (1) the assumed distribution of land use in the watershed; (2) population characteristics, wildlife resources, and other relevant information affecting the characterization of the pollutant of concern and its allocation to sources; (3) present and future growth trends, if taken into consideration in preparing the TMDL; and, (4) explanation and analytical basis for expressing the TMDL through surrogate measures, if applicable. Surrogate measures are parameters such as percent fines and turbidity for sediment impairments, or Chla and phosphorus loadings for excess algae.*

Lake Roberts is surrounded mainly by residential areas and wetlands. The major sources of water to the lake include surface runoff from the watershed, seepage flow from groundwater, and direct rainfall onto the lake surface. The lake also receives flow from Lake Reaves, located northeast of Lake Roberts, and connects with Lake Roberts through the intermediary wetland.

FDEP used the Impaired Waters Rule (IWR) to assess water quality impairments in the Ocklawaha River Basin and verified that Lake Roberts was impaired for nutrients based on the fact that in the verified period (January 1, 2005–June 30, 2012), annual average TSI values exceeded the applicable threshold of 60. Also the median TN/TP ratio during the verified period was 24, suggesting that the phytoplankton community is co-limited by nitrogen and phosphorus in the lake. Lake Roberts was also verified as impaired for nutrients in the Group 1, Cycle 3 assessment, exceeding the annual average TSI threshold of 60. Lake Roberts did not meet the NNC based on a preliminary analysis of the available data and remained listed as verified impaired for nutrients.

Table 4.1 of the Report lists the land use types and the corresponding acreages in the Lake Roberts watershed for 2004 and 2009, and the change in acreage of these land uses. The largest change was a 104-acre increase in medium-density residential, from 108 acres in 2004 to 211 acres in 2009, a 49% increase. At the same time, low-density residential decreased 68 acres, going from 107 acres to 40 acres, or a 171% decrease. The acreage of the other land use types in 2009, including open land/recreational, forest/rangeland, and wetlands, decreased by 91%, 7%, and 12%, respectively.

No National Pollutant Discharge Elimination System (NPDES) permitted wastewater facilities were identified in the Lake Roberts watershed that discharge directly to surface waters. In the Lake Roberts watershed, the stormwater collection systems owned and operated by Orange County, in conjunction with the Florida Department of Transportation (FDOT) District 5, are covered by an NPDES Phase I Municipal Separate Storm Sewer System (MS4) permit (FLS000011). The City of Winter Garden is a

co-permittee in the MS4 permit, and a portion of the watershed is situated within the city limits. Nutrient loadings to Lake Roberts are primarily generated from nonpoint sources.

***Assessment***: The EPA concludes that FDEP has adequately identified the impaired waterbodies, the pollutant of concern, and the magnitude and location of the pollutant sources.

## 2. Description of the Applicable WQS and Numeric Water Quality Target

*The TMDL submittal must include a description of the applicable state/tribe WQS, including the designated use(s) of the waterbody, the applicable numeric or narrative water quality criterion, and the statewide antidegradation policy. Such information is necessary for the EPA's review of the load and wasteload allocations which are required by regulation. A numeric water quality target for the TMDL (a quantitative value used to measure whether or not the applicable WQS is attained) must be identified. If the TMDL is based on a target other than a numeric water quality criterion, then a numeric expression, usually site-specific, must be developed from a narrative criterion and a description of the process used to derive the target must be included in the submittal.*

Lake Roberts is a Class III waterbody, with a designated use of fish consumption, recreation, and propagation and maintenance of a healthy, well-balanced population of fish and wildlife. The Class III water quality criterion that is applicable to the verified impairment for this water is Florida's nutrient criterion in paragraph 62-302.530(48)(b), F.A.C. The nutrient TMDLs presented in the document constitute site-specific numeric interpretations of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable NNC in subsection 62-302.531(2), F.A.C., for this waterbody. The lake-specific NNC is more representative of natural conditions in the lake than the generally applicable TN and TP NNC. The Chl*a* criterion is not revised by this H1. The TMDL loads for TN and TP will be considered as site-specific interpretations of the narrative criterion.

The process used for identifying the water quality targets and establishing the nutrient TMDLs consisted of the following main steps: 1) Estimating the TP and TN loadings for Lake Roberts through various contributing sources; 2) Inputting the loads input into the BATHTUB Eutrophication Model to establish the relationship between TN and TP loadings and in-lake TN, TP, and Chl*a* concentrations (calibrating of the BATHTUB model against the measured in-lake concentrations) and using it to predict the existing in-lake TN, TP, and Chl*a* concentrations; 3) Establishing that the applicable Chl*a* criterion of 20 µg/L would not abate the natural background condition, and; 4) Determining the final in-lake TN and TP target concentrations for the restoration of Lake Roberts (1.02 and 0.044 mg/L, respectively) by reducing the watershed TN and TP loads iteratively until simulated AGM Chl*a* in Lake Roberts met the Chl*a* criterion of 20 µg/L in each year of the simulation.

The nutrient loadings, 1,655 kg/yr for TN and 100 kg/yr for TP expressed as long-term 7-year averages of annual loads, not to be exceeded, that resulted in the target concentrations were considered the TMDLs for the lake. The detailed process for developing the water quality target is explained in chapter 5 of the TMDL and is also summarized in section 3 below.

***Assessment***: The EPA concludes that FDEP has properly addressed its WQS when setting a numeric water quality target.

## 3. Loading Capacity - Linking Water Quality and Pollutant Sources

*As described in the EPA guidance, a TMDL identifies the loading capacity of a waterbody for a particular pollutant. The EPA regulations define loading capacity as the greatest amount of loading that a water can receive without violating a WQS (40 CFR section 130.2(f)). The loadings are required to be expressed as either mass-per-time, toxicity or other appropriate measure (40 CFR section 130.2(i)). The TMDL submittal must identify the waterbody's loading capacity for the applicable pollutant and describe the rationale for the method used to establish the cause-and-effect relationship between the numeric target and the identified pollutant sources. In most instances, this method will be a water quality model. Supporting documentation for the TMDL analysis must also be contained in the submittal, including the basis for assumptions, strengths and weaknesses in the analytical process, results from water quality modeling, etc. Such information is necessary for the EPA's review of the load and wasteload allocations, which are required by regulation.*

*In many circumstances, a critical condition must be described and related to physical conditions in the waterbody as part of the analysis of loading capacity (40 CFR section 130.7(c)(1)). The critical condition can be thought of as the "worst case" scenario of environmental conditions in the waterbody in which the loading expressed in the TMDL for the pollutant of concern will continue to meet WQSs. Critical conditions are the combination of environmental factors (e.g., flow, temperature, etc.) that results in attaining and maintaining the water quality criterion and has an acceptably low frequency of occurrence. Critical conditions are important because they describe the factors that combine to cause a violation of a WQS and will help in identifying the actions that may have to be undertaken to meet WQSs.*

The U.S. Army Corps of Engineers' BATHTUB model was used to assess in-lake water quality responses to watershed TN and TP loads. The model was run through the 13-year period of observation (2000-2012) to simulate Chl*a* responses in the lake to watershed nutrient loadings and ultimately to estimate assimilative capacity. Because Lake Roberts is a shallow lake, and assumed to be a well-mixed lake for modeling purposes FDEP believed that it was an appropriate choice.

The nutrient balance model assumes that the net accumulation of nutrients in a lake is the difference between nutrient loadings into the lake from various sources and the nutrients carried out through outflow and the losses of nutrients through whatever decay processes occur inside the lake. In this analysis, nutrient inputs included TN and TP loadings though stormwater surface runoff from various land uses, baseflow contribution (including contributions from septic tanks), artesian input, and atmospheric deposition. Nutrient output was considered primarily through lake outflow. The major pathway of decay for TN and TP in the model is through sedimentation to the bottom of the lake.

Annual mean concentrations of TN, TP, and Chl*a* predicted by BATHTUB were determined to be comparable to the annual concentrations observed for Lake Roberts, within the coefficient of variance and the long-term means with 95% confidence intervals. The natural land use background conditions for the Lake Roberts watershed were established to ensure that the proposed TN and TP targets will not abate the natural background condition. For this simulation, all anthropogenic land uses were converted to forest in the model, and anthropogenic groundwater seepage inputs of TN and TP from septic tanks were removed from current groundwater seepage TN and TP loadings to the lake. The final allowable TMDLs for Lake Roberts was calculated by including all incoming TN and TP loads such as watershed loads, groundwater seepage loads, and existing atmospheric loads, as shown in Table 5.12 page 72 of the TMDL.

Table 5.12 of the TMDL summarized TN and TP loads from all sources to achieve the target concentrations in Lake Roberts. The final allowable TMDLs for Lake Roberts are 1,655 kg/yr of TN and 100 kg/yr of TP, which represent a 16% reduction in TN and a 28% reduction in TP from all existing incoming loads. These TMDLs will meet the AGM Chl*a* criterion of 20 µg/L, resulting in AGM TP and

TN targets of 0.044 mg/L and 1.02 mg/L, not to be exceeded in any year, and will protect the designated use of Lake Roberts.

The primary datasets used in model development were water quality data from the IWR Database Run 49, rainfall and evapotranspiration data from 2000 to 2012, and lake stage data for 2000 to 2012. During the simulation period, total annual average rainfall varied from 24.6 to 60.0 inches and averaged 47.4 inches. A comparison with the long-term average rainfall data indicated that 2000 and 2001 were dry years, while 2002 and 2006 were wet years. This indicates that critical conditions were considered in developing the TMDL.

***Assessment:*** The EPA concludes that the loading capacity, having been calculated using EPA-reviewed water quality models, and using observed concentration data and water quality targets consistent with numeric water quality criteria, has been appropriately set at a level necessary to attain and maintain the applicable WQS. The H1 is based on a reasonable approach for establishing the relationship between pollutant loading and water quality.

### 4. Load Allocation (LA)

*The EPA regulations require that a TMDL include LAs, which identify the portion of the loading capacity allocated to existing and future nonpoint sources and to natural background (40 CFR section 130.2(g)). Load allocations may range from reasonably accurate estimates to gross allotments (40 CFR section 130.2(g)). Where it is possible to separate natural background from nonpoint sources, load allocations should be described separately for background and for nonpoint sources.*

*If the TMDL concludes that there are no nonpoint sources and/or natural background, or the TMDL recommends a zero load allocation, the LA must be expressed as zero. If the TMDL recommends a zero LA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero LA implies an allocation only to point sources will result in attainment of the applicable WQS, and all nonpoint and background sources will be removed.*

As stated in the TMDL, the exact boundaries between those areas of the watershed covered by the WLA allocation for stormwater and the LA allocation are unknown, hence both the LA and the WLA for stormwater received the same percent reduction. The LA is a 16% reduction in TN and a 28% reduction in TP of the total nonpoint source loadings based on the period from 2000 to 2012. As the TMDLs are based on the percent reduction in total watershed loading and any natural land uses are held harmless, the percent reductions for anthropogenic sources may be greater. Moreover, the LA may include loading from stormwater discharges regulated by FDEP and the water management district that are not part of the NPDES Stormwater Program.

***Assessment:*** The EPA concludes that the LAs provided in the TMDLs are reasonable and will result in attainment of the WQSs.

### 5. Wasteload Allocation (WLA)

*The EPA regulations require that a TMDL include WLAs, which identify the portion of the loading capacity allocated to existing and future point sources (40 CFR section 130.2(h)). If no point sources are present or if the TMDL recommends a zero WLA for point sources, the WLA must be expressed as zero. If the TMDL recommends a zero WLA after considering all pollutant sources, there must be a discussion of the reasoning behind this decision, since a zero WLA implies an allocation only to nonpoint sources and background will result in attainment of the applicable WQS, and all point sources will be removed.*

*In preparing the WLA, it is not necessary that each individual point source be assigned a portion of the allocation of pollutant loading capacity. When the source is a minor discharger of the pollutant of concern or if the source is contained within an aggregated general permit, an aggregated WLA can be assigned to the group of facilities. However, it is necessary to allocate the loading capacity among individual point sources as necessary to meet the WQS.*

*The TMDL submittal should also discuss whether a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur. In such cases, the state/tribe will need to demonstrate reasonable assurance that the nonpoint source reductions will occur within a reasonable time.*

As stated in chapter 4, section 4.2.1 of the TMDL, no active NPDES-permitted facilities in the Lake Roberts watershed discharge either into the lake or its watershed. Therefore, no WLA is provided for wastewater facilities. The stormwater collection systems in the Lake Roberts watershed, which are owned and operated by Orange County, are covered by an NPDES Phase I MS4 permit (FLS000011). The wasteload allocations for stormwater discharges are a 16% reduction in TN and a 28% reduction in TP of the total loading, which are the required percent reductions for the total TN and TP loads from all sources.

The TMDL notes that any MS4 permittee is only responsible for reducing the anthropogenic loads associated with stormwater outfalls that it owns or otherwise has responsible control over, and it is not responsible for reducing other nonpoint source loads in its jurisdiction.

***Assessment***: The EPA concludes that the WLAs provided in the TMDL are reasonable and will result in the attainment of the WQS.

## 6. Margin of Safety (MOS)

*The statute and regulations require that a TMDL include a MOS to account for any lack of knowledge concerning the relationship between load and WLA and water quality (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)). The EPA 1991 guidance explains that the MOS may be implicit, i.e., incorporated into the TMDL through conservative assumptions in the analysis, or explicit, i.e., expressed in the TMDL as loadings set aside for the MOS. If the MOS is implicit, the conservative assumptions in the analysis that account for the MOS must be described. If the MOS is explicit, the loading set aside for the MOS must be identified.*

The TMDL states that "Consistent with the recommendations of the Allocation Technical Advisory Committee (FDEP 2001), an implicit MOS was used in the development of the Lake Roberts TMDL because it was based on the conservative decisions associated with a number of the modeling assumptions in determining the TMDL (i.e., loading and water quality response) for Lake Roberts." One such example of FDEP's approach is the use of event mean concentrations for different land use types in simulating run off nutrient loads thus accounting for contributions from normal failed septic tanks. Also, FDEP used the maximum simulated in-lake restoration TP and TN targets of 0.044 and 1.02 mg/L, respectively, expressed as AGMs, not to be exceeded in any year, to ensure that AGMs will be met even under the worst-case scenario. This conservative approach provided for an additional MOS.

***Assessment***: The EPA concludes that the H1 incorporates an adequate margin of safety.

## 7. Seasonal Variation

*The statute and regulations require that a TMDL be established with consideration of seasonal variations. The method chosen for including seasonal variations in the TMDL must be described (CWA section 303(d)(1)(C), 40 CFR section 130.7(c)(1)).*

Monthly TN, TP, and Chl*a* concentrations observed for Lake Roberts from 2000 through 2012 are presented in Figure 5.3 of the TMDL. No seasonal trends were observed for TN and TP concentrations or TN/TP ratios during the 13-year period. However, monthly Chl*a* concentrations were slightly elevated in May through September compared with December through April, showing a peak concentration in September, a trend typical in subtropical regions, indicating that algae production is greater from May through November. The average concentration of Chl*a* during the growing season was 29.4 µg/L, while the concentration during the non-growing season averaged 16.7 µg/L.

***Assessment***: The EPA concludes that seasonal variations were considered and that the H1 allocations ensure protection of the WQS throughout all seasons.

## 8. Monitoring Plan to Track TMDL Effectiveness

*The EPA's 1991 document, Guidance for Water Quality-Based Decisions: The TMDL Process (EPA 440/4-91-001), recommends a monitoring plan to track the effectiveness of a TMDL, particularly when a TMDL involves both point and nonpoint sources, and the WLA is based on an assumption that nonpoint source load reductions will occur. Such a TMDL should provide assurances that nonpoint source controls will achieve expected load reductions and, such TMDL should include a monitoring plan that describes the additional data to be collected to determine if the load reductions provided for in the TMDL are occurring and leading to attainment of WQSs.*

Often, restoration of impaired waters in Florida is accomplished cooperatively with stakeholders by creating a basin management action plan, referred to as the BMAP. BMAPs typically include, among other components, implementation milestones, project tracking, water quality monitoring, and adaptive management procedures. Table A-4 of the TMDL mentions that FDEP and Orange County had collected water quality data in Lake Roberts and that these monitoring activities would be continued in order to evaluate future water quality trends in Lake Roberts. The data collected through these monitoring activities would be used to evaluate the effect of best management practices (BMPs) implemented in the watershed on the lake's TN and TP concentrations in subsequent water quality assessment cycles.

***Assessment***: Although not a required element of the EPA's TMDL approval process, FDEP indicated that several stakeholders would be carrying out monitoring activities in Lake Roberts, which would help to gauge the progress toward attainment of WQSs. The EPA is taking no action on the monitoring plan.

## 9. Implementation Plans

*On August 8, 1997, Bob Perciasepe (EPA Assistant Administrator for the Office of Water) issued a memorandum, "New Policies for Establishing and Implementing Total Maximum Daily Loads (TMDLs)," that directs regions to work in partnership with states/tribes to achieve nonpoint source load allocations established for 303(d)-listed waters impaired solely or primarily by nonpoint sources. To this end, the memorandum asks that regions assist states/tribes in developing implementation plans that include reasonable assurances that the nonpoint source load allocations established in a TMDL for waters impaired solely or primarily by nonpoint sources will in fact be achieved. The memorandum also includes a discussion of renewed focus on the public participation process and recognition of other relevant watershed management*

*processes used in the TMDL process. Although implementation plans are not approved by the EPA, they help establish the basis for the EPA's approval of a TMDL.*

The implementation of a TMDL in Florida occurs through specific requirements in NPDES wastewater and MS4 permits, and/ or through local or regional water quality initiatives or BMAPs. Florida implements statewide regulations to address the issue of nonpoint source pollution by requiring new development and redevelopment to treat stormwater before it is discharged. The stormwater treatment requirements are integrated with other stormwater flood control requirements of the state water management districts. The state's water management districts are also required (chapter 62-40, F.A.C.) to establish stormwater Pollution Load Reduction Goals (PLRGs) and adopt them as part of a Surface Water Improvement and Management plan, other watershed plan, or rule.

Section 1.3 of the TMDL states that "This TMDL document would be followed by the development and implementation of a restoration plan to reduce the amount of nutrients that caused the verified impairment of Lake Roberts." FDEP will be working with individuals, businesses, local governments and other stakeholders within the watershed to undertake or continue reductions in the discharge of pollutants and achieve the established TMDL for the impaired waterbody.

***Assessment:*** Although not a required element of the TMDL approval, FDEP discussed how information derived from the TMDL analysis process will be used to by stakeholders to develop PLRGs and implement BMPs that support implementation of the TMDL. The EPA is taking no action on the implementation portion of the submission.

## 10. Reasonable Assurances

*The EPA guidance calls for reasonable assurances when a TMDL is developed for waters impaired by both point and nonpoint sources. In a water impaired by both point and nonpoint sources, where a point source is given a less stringent wasteload allocation based on an assumption that nonpoint source load reductions will occur, reasonable assurance that the nonpoint source reductions will happen must be explained in order for the TMDL to be approvable. This information is necessary for the EPA to determine that the load and wasteload allocations will achieve WQSs.*

*In a waterbody impaired solely by nonpoint sources, reasonable assurances that load reductions will be achieved are not required in order for a TMDL to be approvable. However, for such nonpoint source-only waters, states/tribes are strongly encouraged to provide reasonable assurances regarding achievement of load allocations in the implementation plans described in section 9, above. As described in the August 8, 1997 Perciasepe memorandum, such reasonable assurances should be included in state/tribe implementation plans and "may be non-regulatory, regulatory, or incentive-based, consistent with applicable laws and programs."*

In section 1.3 of the TMDL, FDEP states that restoration activities would depend heavily on the active participation of the City of Winter Garden, Orange County, residents living within the watershed, businesses within the watershed, and other stakeholders. FDEP would be working with these organizations and individuals to undertake or continue reductions in the discharge of pollutants and achieve the established TMDL for the impaired waterbody. The Florida Department of Agriculture and Consumer Services (FDACS) will play an important role in helping agricultural producers implement BMPs and other measures to address nutrient losses. A number of these stakeholder (City of Apopka, FDACS, Orange County, Florida Department of Transportation) have already been actively involved in data collection, and analysis, which is a good indication of their interest and commitment in restoring Lake Roberts.

***Assessment:*** The EPA considered the reasonable assurances contained in the TMDL. Point sources are required to comply with their NPDES permits, which must include the requirements and assumptions of the H1. Reductions for nonpoint sources are expected to occur as a result of the incentive and voluntary programs that were already be in place or will be developed as part of the restoration activities with active participation of its stakeholders.

## 11. Public Participation

*The EPA policy is that there must be full and meaningful public participation in the TMDL development process. Each state/tribe must, therefore, provide for public participation consistent with its own continuing planning process and public participation requirements (40 CFR section 130.7(c)(1)(ii)). In guidance, the EPA has explained that final TMDLs submitted to the EPA for review and approval must describe the state/tribe's public participation process, including a summary of significant comments and the state/tribe's responses to those comments. When the EPA establishes a TMDL, the EPA regulations require the EPA to publish a notice seeking public comment (40 CFR section 130.7(d)(2)).*

*Inadequate public participation could be a basis for disapproving a TMDL; however, where the EPA determines that a state/tribe has not provided adequate public participation, the EPA may defer its approval action until adequate public participation has been provided for, either by the state/tribe or by the EPA.*

FDEP published a notice of development of rulemaking on December 15, 2014 to initiate TMDL development for impaired waters in the Ocklawaha River Basin. A technical workshop for the Lake Roberts TMDL was held on February 14, 2015 to present the general TMDL approach to local stakeholders.

A "Notice of Proposed Rule" to adopt TMDLs (which would also constitute site-specific numeric interpretations of the narrative criteria set forth in paragraph 62-302.530(90) (b), F.A.C., was published in Florida Administrative Register Volume 43, Number 41, on March 1, 2017. A public hearing on the rule was held on April 21, 2017.

FDEP documented that written comments were received from one entity who requested clarification on the BATHTUB model development, input files and curve number methods. FDEP reviewed the stakeholder concerns, provided the information requested, and made clarifications, as appropriate, in the revised TMDL document.

***Assessment:*** The EPA concludes that the state involved the public during the development of the H1, provided adequate opportunities for the public to comment on the TMDL, and provided reasonable responses to the comments received.

## 12. Submittal Letter

*A submittal letter should be included with the TMDL analytical document, and should specify whether the TMDL is being submitted for a technical review or is a final submittal. Each final TMDL submitted to the EPA must be accompanied by a submittal letter that explicitly states that the submittal is a final TMDL submitted under section 303(d) of the CWA for the EPA review and approval. This clearly establishes the state/tribe's intent to submit, and the EPA's duty to review, the TMDL under the statute. The submittal letter, whether for technical review or final submittal, should contain such information as the name and location of the waterbody, and the pollutant(s) of concern.*

***Assessment:*** Accompanying the state's (May 2017) final TMDL for nutrients was a submittal letter dated June 19, 2017 from Fredrick L. Aschauer, Jr., General Counsel, FDEP, requesting the review and

approval of the nutrient TMDLs for: Wacissa River, Wacissa Springs, Crescent Lake, Lake Denham, Lake Weir, Marshall Lake, Lochloosa Lake, Cross Creek and Lake Roberts.

## III. Conclusion

The Water Protection Division is **APPROVING** the H1 NNC and TMDLs addressed by this decision document in accordance with sections 303(c) and 303(d) of the CWA, as consistent with the CWA and 40 CFR parts 131 and 130, respectively.

The H1 NNC presented in this decision document will constitute the site-specific numeric interpretation of the narrative nutrient criterion set forth in paragraph 62-302.530(48)(b), F.A.C., that will replace the otherwise applicable numeric criteria for nitrogen and phosphorus in subsection 62-302.531(2) for this particular water, pursuant to paragraph 62-302.531(2)(a), F.A.C. Based on the chemical, physical and biological data presented in the development of the H1 NNC outlined above, the EPA concludes that all of the aforementioned H1 NNC provide for and protect healthy, well-balanced, biological communities in the waters to which the NNC apply and are consistent with the CWA and its implementing regulations at 40 CFR part 131.11.

Therefore, the revised TN and TP criteria for Lake Roberts are a TN load of 1,655 kg/yr and TP load of 100 kg/yr expressed as long-term 7-year averages of annual loads, not to be exceeded (page 83 of the Report). All other criteria applicable to this waterbody remain in effect, including other applicable criteria at 62-302.531(2)(b). The requirements of paragraph 62-302.530(48)(a), F.A.C. also remain applicable.

Furthermore, after a full and complete review, the EPA finds that the H1 for Lake Roberts/Ocklawaha River Basin for TN and TP satisfies all of the elements of approvable TMDLs. This approval is for the *Nutrient TMDLs for Lake Roberts (WBID 2872A) and Documentation in Support of the Development of Site-Specific Numeric Interpretations of the Narrative Criterion*, dated May 2017, addressing Lake Roberts use impairments due to nutrients based on elevated TSI values.